Lifelong Learning and Information Literacy

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1. INTRODUCTION

Learning is as old as humankind, indeed curiosity and the capacity to learn are among the defining characteristics of what it means to be human. For many hundreds of generations, people learned only through their own experience, and to a lesser extent, through the observation of others. Gradually, however, as language became more complex and sophisticated, it was possible to codify what had been learned by previous generations, and in distant locations, and to pass on information about unseen phenomena. In most early cultures which relied on oral transmission of knowledge, people had highly evolved capacities for listening and for remembering; however, compared with most people living today in advanced western countries, the amount and complexity of information to be dealt with by an average human being was clearly bounded and relatively slowly changing.

With the invention of writing, it became possible to pass on insights and experiences over greater distances and a larger number of generations. However, at the same time as the amount of information that an individual could acquire expanded significantly, life expectancies also increased and many people found that they had more leisure time in which to think and to learn. When people lived longer, it became possible for the older people and those not directly engaged in the immediate tasks of gathering, hunting, rearing children or protecting themselves and others from enemies to spend time thinking and learning through observation and mentation. Literacy, of course, itself became a tool that separated people, so that those who lacked the ability to decipher hieroglyphs, and later other forms of writing, were forced to fall back on traditional means of learning about their environments and passing on such information to others in their family, tribe or community group.

To some extent, it is true that modern human beings have exactly the same mental capacities and endowments as did our ancient forebears, but with better health, longer life spans, more discretionary time, and various kinds of adaptive and supportive technologies, the capability and propensity toward learning throughout life has expanded significantly over recent generations.

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Today, learning is perhaps not as much a matter of life and death as it was for our distant ancestors, nevertheless most people have some natural inclination to learn and, with the time and means at their disposal, learning is an important (if often unrecognised) aspect of our lives. Much of this learning occurs incidentally and unplanned, in the course of doing something else; indeed, when asked, many people fail to recognise this as learning at all. Other learning however is more intentional and deliberate. Some of it is formalised in the sense that there is some explicit instruction and very commonly some assessment of learning outcomes. But a very large proportion of it is planned, managed and evaluated by the individual him- or herself. Of this, some depends on participating in or observing particular activities, some depends on interactions with other people – either individually or in groups – and some on reading and writing.

In all these cases, the learner requires certain skills and attributes if his or her learning is to progress successfully. These skills, which form part of the concept of information literacy, will be dealt with later in this paper.

2. MAJOR DRIVERS FOR LIFELONG LEARNING

The concept of lifelong learning has had international currency since at least 1972, with the appearance of the Final Report of Unesco's International Commission on the Development of Education. The so-called Faure Report argued that "every citizen should have the means of learning, training and cultivating himself [or herself] freely available … under all circumstances, so that he [or she] will be in a fundamentally different position in relation to his [or her] education" (Faure et. al., 1972, p. 163). Later in the same Report, the authors advocated lifelong education "as the master concept for educational policies in the years to come for both developed and developing countries" (p. 182).

Since then the notion has gained increasing currency, and has spawned a huge and burgeoning body of literature in all parts of the globe. One of the most audacious initiatives has been the formation of the World Initiative on Lifelong Learning, which defines the concept as follows:

> A continuously supportive process which stimulates and empowers individuals to acquire all the knowledge, values, skills and understanding they will require throughout their lifetimes and to apply them with confidence, creativity and enjoyment in all roles, circumstances and environments. (WILL, 1994, p. 5)

Clearly this is a wide-ranging concept, which extends well beyond the boundaries of formal education, and affects a range of stakeholders including governments, business and industry, clubs societies and associations, providers of adult non-formal and community-based learning and, increasingly, every individual or organization who makes use of the Internet – either as a producer or consumer of information.

Whilst learning may be a natural human activity, in recent years it has taken on a particular significance in terms of both individual and collective advancement and well-being. In times of rapid and pervasive change, an existing or static body of knowledge does not equip people with the ability to cope, much less to thrive and advance. What, then are the dominant changes that are impacting on our lives and bringing about a requirement for continuing learning and adaptation?

The first and most obvious is the pervasive **effects of new technologies** It is virtually impossible to escape the implications of new technologies, which affect every aspect of our lives. The number of 'gadgets' that are encountered in day to day life is beyond counting – everything from Video Cassette Recorders and Automatic Teller Machines, to mobile phones, microwave ovens and programmable washing machines. Whether in the home, the community, the office, the library or on public transport, people have to cope with new and often intimidating technologies. Thus simply to go about one's everyday life, there is a constant barrage of new devices, new applications and new terminology to be mastered.

Evidence – both research-based and anecdotal - suggests that young people have relatively fewer problems adapting to these technologies than their elders. In books such as Tapscott's *Growing up Digital* and Rushkoff's *Children of Chaos*, there is evidence that many young people have an almost intuitive sense of how technologies work, or how they should work. This, combined with a more adventurous attitude (most young people are not particularly concerned they are going to break something!), means that they have fewer inhibitions than adults about the learning associated with using new technologies. However, for many older people, lots of everyday devices – especially those that consist of or depend on digital technologies – are in themselves both a constant cause for new learning and, as I will discuss later in this paper, commonly a source of new learning opportunities.

A second major wellspring for new learning is the phenomenon of **globalisation**. This embraces everything from the changing geo-political situation, to issues of mass migration, the displacement of large numbers of people, and the impacts of different cultures and religions on established ways of thinking and behaving. In its more benign manifestations, it includes opportunities for travel and language learning, increased availability of products and services from abroad, and a more international outlook. However, there is also a more sinister and alarming aspect of globalisation which demands new learning, and that is the effect of changed economic circumstances, the emergence of multinational corporations and, for many, the loss of jobs, necessitating the development of new skills in order to gain or retain employment.

Changing patterns of work, whether precipitated by globalisation, technology or simply by changes in organisational structures also provide a significant pressure for new learning. Clearly this imperative impacts most directly on those already in the workforce, but there are few if any people who escape the need for updating, learning about new markets products or services, adjusting to changing organisational structures and systems, or in other ways engaging in work-related learning. As mentioned above, some such learning takes place through short courses and other off-the-job interventions; some through mentoring or on-the-job training, some through the distribution of new specifications and organisational structures via bulletin boards,

email or through the organisation's intranet. Most of it occurs, however, incidentally and continuously through informal means including conversations with colleague, suppliers and customers, or through casual interactions with others in, or in relation to, the workplace.

As part of the widespread and pervasive changes that affect most people nowadays, alterations in **family and community relations** provide both an impetus and context for new learning. An often quoted aphorism, especially in traditional societies, is "it takes a village to raise a child"; the clear implication being that children learn better when they are exposed to a range of different expectations and perspectives. For the past couple of hundred years, especially in advanced western societies, there has been a trend away from extended families and towards relatively tight-knight nuclear family groupings. Taken with the increased mobility that often sees people growing up in one or more different locations, and then moving around periodically throughout their lives, the basic unit for education has become the family and the school, rather than the metaphoric 'village.'

Within the past couple of generations, however, this trend has been reversed somewhat, with the conventional nuclear family giving way to a variety of different household arrangements which represent for the participants – children and adults alike – a rich context for learning. While much of this learning concerns human relationships and the dynamics of social groups, a lot of it is broader in nature, facilitated by the wider circle of contacts, and broader range of perspectives. The learning demands made by such circumstances may well extend the learning competence of the family or community members, and in some ways resemble the extended family groupings with which our ancestors would have been familiar.

Finally, as a backdrop for all these various changes, we have witnessed an unprecedented **explosion in available information**. The total amount of information in our society is expanding at an unprecedented rate, and it is challenge for everyone, including the best educated, most widely traveled and most sophisticated information users to keep up with their individual and local areas of interest, much less with global developments and findings. This phenomenon, commonly dubbed 'information overload,' 'information glut' or 'data smog,' captures perfectly the extraordinary challenge in keeping up without feeling overwhelmed by the tidal wave of information; a challenge which commonly leads to a phenomenon called 'information anxiety' (Wurman, Leifer & Sume, 2000).

3. PATTERNS OF LIFELONG LEARNING

The evidence suggests that those people (and peoples) who fail to keep up with developments are likely to fall progressively further and further behind, and to become less employable and less competitive. As a result, there is a relentless pressure for increased learning across the lifespan, which may be met in a variety of ways. How then do people manage to cope with the manifold and diverse learning challenges with which they are confronted? Clearly the answer is different for each category of person, and indeed for each individual, and likewise the skills that are required of the successful learner in each context are not exactly the same.

Nevertheless, a useful typology distinguishes the following classes or categories of learning:

3.1. Formal learning

For most people, the learning that springs to mind readily is that which occurs in formal educational settings such as schools, colleges and universities. It is distinguished by the presence of formal curricula, a teacher trainer tutor or other facilitator, and usually by such devices as timetables, lectures or classes, reading lists and examinations. There are distinct rules that guide the learner in such circumstances, especially those that indicate how he or she should behave and what constitutes valued learning.

Formal learning also extends into the upper reaches of postgraduate study, which commonly involves high levels of self-directedness and of independent learning. In this sense, it is not unlike projects that are contrived by learners for their own information and enjoyment and, although the rules that govern knowledge claims in such learning may be more exacting than those accepted by hobbyists and other self-directed learners, nevertheless the activities are very much the same. Indeed, there are many fields of endeavour where amateurs and professionals alike contribute to the advancement of the field: ornithology; archaeology; astronomy; genealogy and local history are such domains.

At all levels of formal education, from preschool right through to graduate school, a good deal of valued learning actually occurs outside the curriculum, and takes place incidentally. For instance, students get together to help each other, or to chat informally about issues such as the personalities of the staff or faculty, or the best location to find appropriate texts or learning materials. It is apparent, therefore, that not all important learning occurs within the classroom, studio or laboratory or within the boundaries of the curriculum, and that at least some of the skills required to participate in this vital but submerged aspect of institutional life may be 'caught rather than taught.'

3.2. Nonformal learning

This kind of learning is organised and planned by someone, but does not lead to any qualification or recognition. It includes most short courses whether undertaken for personal enrichment or professional/vocational advancement. A large component of such learning is that which is planned and undertaken by the learner him- or herself. Since the advent of the Internet, and more recently the World Wide Web, a great deal of such learning is occurring in technologically mediated forms. Accordingly, it is increasingly necessary for people to have connectivity and to be technologically 'literate' so that they are able to access and to use the technology fluently.

3.3. Informal and incidental learning

As important as formal and nonformal learning are, they represent only a minute fraction of the learning that occurs within any one person's lifespan. In fact, there is evidence to suggest that, in terms both of duration and impact, informal learning far outstrips the other two types. It occurs more or less continuously and is coterminous

with life. It requires no particular preparation, although those who are more attentive and or have a wider circle of experiences are likely to have both more extensive and more diverse incidental learning. As previously mentioned, informal and incidental learning does not always occur in informal settings; indeed considerable informal learning occurs in formal settings such as schools, colleges, universities and training centres, but it is not explicitly planned and managed as part of the curriculum or program of study.

Informal learning is, by its nature, beyond the reach of formal education and training providers, however the capacity for and predisposition towards learning is largely determined during the early years of a person's life. Accordingly attention must be paid to creating and encouraging those circumstances that are linked to the orientation towards learning and this, along with appropriate connectivity, is likely to form a vital precondition to full and active participation in many aspects of the twenty-first knowledge economy – work, leisure, health and government.

4. IMPLICATIONS FOR INFORMATION LITERACY

Given the diverse contexts within which learning occurs, and the range of skills that are required to successfully pursue a learning endeavour, how does this relate to Information Literacy? In fact, information literacy and lifelong learning are inextricably intertwined.

Arguably the first mainstream use of the term was in 1974, at almost exactly the same time as the term 'lifelong learning' entered common parlance although, like lifelong learning, the concept – if not the term itself – can be traced back even further. In that year, Paul Zurkowski, then President of the Information Industry Association, presented a report entitled *The Information service environment, relationships and priorities*, in which he advocated the establishment of a national program aimed at achieving information literacy within a ten-year time frame. In the report he wrote;

> People trained in the application of information resources to their work can be called information literates. They have learned techniques and skills for using the wide range of information tools as well as primary sources in molding nformation solutions to their problems. (Zurkowski, 1974, p. 6)

According to the *Final Report* of the American Library Association's 1989 Presidential Commission on Information Literacy, "To be information literate, a person must be able to recognize when information is needed and have the ability to locate, evaluate and use effectively the needed information" (p. 1). This definition of information literacy is not limited to any one form of information; indeed the Report goes on to add, "…whether the information they select comes from a computer, a book, a government agency, a film, or any number of other possible resources."

Like 'lifelong learning,' the concept of information literacy has spawned a huge literature with many slightly different definitions. However, as Webber and Johnson state in their paper entitled 'Conceptions of Information Literacy: New Perspectives and Implications,' most such definitions have the following elements;

- effective information seeking;
- informed choice of information sources;
- information evaluation and selection;
- comfort in using a range of media to best advantage;
- awareness of issues to do with bias and reliability of information; and
- effectiveness in transmitting information to others.

Many of these definitions, including that of the American Library Association already alluded to, tend to portray information literacy largely as a generic accomplishment, a matter of applying certain skills such as information retrieval or critical thinking, irrespective of the subject-matter or of the medium in which it is contained or conveyed. Put simply, the implication is that there is a generic aspect to information literacy; a capability of distinguishing useful from useless resources, reliable from unreliable sources, and sensible from silly knowledge claims. At one level this is probably true, however there is a strongly context-dependent element as well, and information literacy is influenced both by the domain or subject area, and by the form of the information, notably whether it is digital or hard-copy.

With respect to the issue of subject-specific information literacy, simply because someone is competent and knowledgeable in one domain does not mean that this expertise inevitably carries over to an entirely unrelated field. While there may be some aspects of information literacy that can be applied irrespective of the particular field of study, it is also the case that a person who is more expert than another in any given field or study or practice is likely to have a more well-developed sense both of where relevant information is to be located, and how it may be retrieved and evaluated. Each field needs, therefore, to ensure that practitioners and information users in that field have the necessary attributes to be able to learn without being confused or misled by knowledge claims that they encounter.

The issue about how information literacy relates to information technology is a vexed and complex one (Candy, 2000). At one level, the skills needed to retrieve information are quite different and separable from those required to make informed judgments about information. If, for instance, a researcher were to engage a research assistant to locate and retrieve certain information for him or her, then in principle at least, the quality of the information could be judged without regard to the technology used to locate and retrieve it. In practice, however, there is a blurring of Information Literacy and ICT Literacy. To some extent this is because information in the digital environment is at least partly an artefact of the technology itself; many websites, for instance, take on a different appearance and may even have different content depending on the user who is accessing them. Moreover, a number of websites are mutable, meaning that they vary from one visit to the next. Sometimes this is because they are programmed to reflect changes in some element such as seismic readings, stock prices, temperatures, participant numbers or some other dynamic variable. Sometimes, it is because the site itself is altered by successive visits; for instance a bulletin board or discussion list. Sometimes, however, and more insidiously, the content may be altered by the owner of the site and returned to the same URL, without any indication that the content has been altered.

Another consideration is the nature of hypertext links themselves. In pursuing an inquiry, a researcher will characteristically follow a number of links, and to some

extent the information subsists in the links themselves. Even when it does not, it is possible for the information found and downloaded to come from a website of indeterminate provenance, and therefore of unknown reliability. For all these reasons, the evaluation of information in the digital environment is a challenging matter, and one that cannot readily be divorced from the technological competence of the inquirer.

A less esoteric, but nonetheless important consideration is the emergence of new genres in the digital world. A good deal has been written, for instance, about the informality of writing especially in the context of email. In his paper 'Self without body: Textual self-representation in an electronic community,' Giese writes;

> the lack of capitalization of the personal pronoun … is fairly typical and seems to be a direct result of the immediacy of the computer mediated communications environment. This … is probably due to a sense of urgency that is not usually present in a writing mode coupled with a medium that takes much longer to compose a message in. Capitalization … takes too much time and destroys the flow of his 'speech.' The same is true of spelling errors and other typographical blunders. The written word on the net is built for speed, not for show. If, in the opinion of the writer, the meaning is more or less clear there is no social need to go back and correct such blunders. (Giese, 1998, p. 8)

When such 'utterances' are printed out, the information user needs to understand the emerging rules that govern such writing if he or she is not to judge the ideas by the conventions prevailing in the offline world. As Lankshear *et al*. point out in their book *Changing Literacies*;

> *emailing* is made into diverse *literacies* by different users. In our own cases, our emailing will in the course of a typical day move across several (more or less) distinct literacies, characterized by different purposes, different social contexts, different audiences, different 'voices' being involved in composing the messages, etc. These include sending and receiving memos, writing more or less formal letters, responding to chunks of thesis emailed in by students, sending information to or receiving it from some list server on the Internet, and sending or receiving chunks of composition for books or articles from co-authors. Like 'literacy,' 'email' is an umbrella term for a diverse and ever growing array of technological literacies. (Lankshear *et al*., 1997, p. 146)

Because the skills required to access and use information in the offline world are not strictly transferable to the digital realm, a great deal of work has been done by librarians, knowledge managers and other information specialists to specify the attributes both of the ICT Literate person and of a reliable electronic document or source. As interesting as it is, this latter topic falls outside the scope of the present paper; however, with respect to the first of these domains, probably the best known formulation is that which undergirds the International Computer Driving Licence. It comprises seven elements or modules as follows:

Module 1: Basic Concepts of IT
The physical make-up of a personal computer and concepts such as data storage and memory.

Module 2: Using the Computer and Managing Files
The fundamental functions of a personal computer and its operation system.

Module 3: Word Processing
Creating, formatting and finishing a word-processing document, and using more advanced word-processing features.

Module 4: Spreadsheets
Developing, formatting and using a spreadsheet; using basic formulas and functions to perform standard mathematical and logical functions.

Module 5: Databases
Designing and planning a simple database using a standard database package; retrieving information from an existing database.

Module 6: Presentations
Creating, formatting and preparing presentations, using graphics and charts and various slide show effects.

Module 7: Information and Communication (Internet and Email)
Using a Web browser application and available search engine tools to accomplish Web search tasks; using E-mail software to send, receive and organise messages (http://www.acs.org.au/icdl/pdf/ECDL_Syllabus.pdf).

In a similar vein, a report prepared in 2000 for the Australian government on ICT literacy and access of university and college students proposed a framework of the ICT skills thought to be generally required, irrespective of the particular discipline or field of study:

Table 1. ICT Skills Framework (based on Oliver & Towers, 2000, p. 4)

ICT Literacy	Skills and attributes
Resource/Socio-structural Literacy	• knowledge of a range of available electronic sources and ability to choose the most appropriate • understanding of the nature and location of information on a global and local basis
Research Literacy	• able to formulate electronic searches using the most appropriate search engine or CD-ROM • able to analyse, extract and use information
Communications Literacy	• able to format, communicate or publish ideas electronically using word-processing, email or web-design tools which may include embedded sound and video
Problem-solving Literacy	• able to use spread sheets and charts to present ideas • able to organise and classify information

	• use statistical and analytical software where appropriate
Technological Literacy	• able to learn to use new software tools introduced in courses or through research
	• able to determine the efficacy of new methods over traditional methods
	• be conversant with computer terminology, operation of computer hardware and software, basic maintenance, basic programming concepts and the impact of computers on society and themselves.

Both of the above frameworks heavily emphasise the technological understandings and competencies required to operate in the digital domain. A broader and less technologically oriented formulation is provided by the International Panel on ICT Literacy. Convened by the Educational Testing Service in the United States in 2001, "reflecting the growing importance and ubiquity of new technologies in work, education and everyday life" the International Panel put forward the following definition;

> ICT literacy is using digital technology, communications tools and/or networks to access, manage, integrate, evaluate, and create information in order to function in a knowledge society. (ICT Literacy Panel, 2002, p. 2)

Clearly this definition combines and blends together facility with the technology and with information, thus posing a challenge for those organizations and individuals whose emphasis until now has been exclusively on one facet or the other.

5. DEVELOPMENT OF INFORMATION LITERACY

The preceding discussion leads to a consideration both of how Information Literacy competence may be developed, and by whom. With respect to the question of how, it is apparent that some aspects of information literacy are amenable to direct instruction, and may therefore be incorporated into regular curricular offerings of various teaching and training authorities. Some of these programs can be relatively freestanding and generic, and may therefore be taught and assessed in the abstract. Others, however, are domain-specific and inevitably entail collaboration between information specialists and subject matter experts. There is some potential for the use of advanced information and communication technologies in teaching these information literacy skills; however it must be recognized that not everyone enjoys equal access to the Internet. Thus, issues to do with Information literacy are inextricably intertwined with issues to do with equitable access to information and the broader concept of the digital divide.

Turning to the second issue, namely that of who is responsible for developing information literacy, at one level the responsibility rests primarily with each individual, and is accomplished largely though his or her own efforts. While provision can be made to support people to enhance their information literacy skills, it

is up to those who wish to do so to avail themselves of these opportunities. However, not everyone has equal access to such opportunities to develop and refine their information competence and, as a result, special provision may need to be made for those who are disadvantaged in some way, for example though geographic location, language skills, technological facility, physical disability and other forms of disadvantage.   This is not a responsibility that can be bestowed on any one authority or sector, but must be shared by a range of agencies and organizations.

In addition, since information literacy is itself an evolving and developmental phenomenon, in effect a lifelong pursuit, although it has special and distinctive attributes in different contexts, the development of information literacy is a shared responsibility. This responsibility is jointly the prerogative of the formal education system (from elementary or even pre-school education through to postgraduate study), cultural institutions including libraries and archives, organisations which publish and disseminate information (such as the print and non-print media, and Internet Service Providers), and those groups and individuals which provide information, including companies and corporations, national and international government Departments and agencies and professional associations and societies.

Many libraries and other information resources routinely conduct programs that are described as information literacy, although they are often little more than user education or reader education. In recent years, computer centers in educational institutions, in corporate and business settings, and in the community, have likewise offered short course, helpdesks and consultancies to assist clients with information retrieval projects. However, such initiatives are commonly limited to the generic aspects of Information Literacy, and it is accordingly necessary for subject-matter experts to be involved in providing additional and supplementary education in the structure of particular disciplines or fields of study and practice. Such programs are usually conducted by subject matter librarians or specialist libraries, or by other dedicated information specialists. For instance, one might expect information specialists working with large law companies, court systems or law societies to provide domain-specific instruction and development in the field of law, and the same would apply in other fields such as engineering, medicine, accounting and so on.

But even this would not touch the lives of a large proportion of the population who are either outside the paid workforce or within the workforce but not in roles that provide ready and frequent access to such professional development opportunities. Accordingly there is a need for national policies to support the development of information skills. Such Manifestos or Statements are being developed in many jurisdictions.

Finally, whilst there is an irresistible logic about building information literacy into the courses and programs undertaken by students of all ages, there is evidence to suggest that, in many cases, the educators and trainers working in such settings do no always themselves feel comfortable with the skills required. Accordingly, educational institutions and authorities have bestowed considerable effort onto identifying and specifying the attributes or competencies required to function as educators in the new information rich workplace, and to the provision of adequate and timely professional development. This is particularly vital in the case of ICT Literacy, where many younger learners in fact already have greater levels of confidence and fluency than

many of their teachers. There is thus a requirement for continuing professional development for educators, trainers, librarians and information specialists at all levels and in all sectors to ensure that programs are articulated and that the skills being developed are aligned with the emerging trends in the world of information.

6. National Polices in Relation to Information Literacy and ICT Literacy

Despite Zurkowski's call as long ago as 1974 for national strategic approaches to the development of information literate students and citizens, most governments have until recently been less than wholehearted in their commitment to this goal. In recent years, there has been a flurry of aspirational policies and national agendas about becoming information economies and learning societies, and even some tentative advocacy for information literacy. However, few if any national governments have committed to major educational or social initiatives that would see widespread adoption of information literacy training or assessment for their populations. Most initiatives tend to be piecemeal, in general aimed at limited sections of the population, such as school children, university students, library and information specialists, or those already within or wishing to enter the workforce.

At the broadest level, publications such as the United States Report of the Secretary's Commission on Achieving the Necessary Skills (SCANS Report), the New Zealand Department of Labour's Position Paper entitled 'Closing the Digital Divide: Summary of Stakeholder Discussions,' and the Australian Library and Information Association's 'Statement on Information Literacy for All Australians' envisage partnership between schools, the business community and other groups to create an information literate citizenry.

Not unexpectedly, many jurisdictions have focused on the Information Literacy and ICT Literacy needs of students in school, college and university. The Singapore Ministry of Education, for instance, has not only developed guidelines for information literacy, but also includes as one of its desired outcomes for all students, the ability to "be able to seek, process and apply knowledge" (Singapore, 2000, Outcome of education, ¶ 6). The Japanese Ministry of Education intends to overhaul its school curriculum to give information literacy parity with other foundational skills including "reading, writing and calculus" (Inoue et al., 1997 Information literacy: a Japanese definition, ¶ 1), and the South African Centre for Educational Technology and Distance Education has published a policy document for school libraries which emphasises the commitment to "Develop[ing] information skills in learners so that they know how to plan a project, and how to locate and assess information critically. In its statement of National Goals for Schooling, Australia's Ministerial Council on Employment Education, Training and Youth Affairs MCEETYA) does not specifically use the term 'information literacy,' but nevertheless does affirm that "when students leave school, they should … be confident, creative and productive users of new technologies, particularly information and communication technologies, and understand the impact of those technologies on society (MCEETYA, 1999, ¶ 1.6).

The previously mentioned Position Paper from the New Zealand Department of Labour covers the ICT Literacy needs of many cohorts of stakeholder, including even pre-school students, and in 1998, the American Association of School Libraries

released a report entitled *Information Power: Building Partnerships for Learning*. This has been followed up with a series of companion volumes, a website and a CD-ROM all designed to help schools to build the information literacy skills of their students. In Australia, a consolidated report by the Department of Education Training and Youth Affairs entitled *Learning for the Knowledge Society: An Education and Training Action Plan for the Information Society* (DETYA, 2000), draws together a number of initiatives from the schools, vocational education and higher education sectors.

Around the world, one group of learners who seem to have received concentrated attention are students in post-compulsory education, especially in universities. In all of the countries already referred to, and others, there have been projects, initiatives and publications concentrating on the information needs of higher education students and faculty members. The Association of College and Research Libraries in the United States has developed a set of standards for information literacy competency in higher education (ACRL, 2000), which has been endorsed, with modifications, by the Council of Australian University Librarians (CAUL, 2001). In the European Union, a distance education program focusing on information literacy has been developed which concentrates, in the first instance, on specialist library staff who in a trickle-down or 'train-the-trainer model" are expected to pass on their insights to practising scientists and engineers (European Union, 1998).

In any dynamic and fast-changing field such as this, it is difficult to be exhaustive at the national level, and even more impossible to identify useful projects and publications that are generated at the level of states, provinces or prefectures. However, it may reasonably be said that, while no one country or region has a comprehensive policy environment, there are many valuable examples in different parts of the world, and any Government wishing to create an integrated approach to Information Literacy and ICT Literacy has a wealth of resources on which to draw for inspiration.

7. CONCLUSION

In recent years, the concept of lifelong learning has moved from being largely a rhetorical flourish at the margins of educational theory and practice to a central construct as a major organising principle for educational policy makers and practitioners around the world. Of the many reasons for this, one principal factor has been the 'information explosion,' which has led to an irresistible requirement for more or less continuous learning by all members of society. What is more, the changes are so pervasive and unremitting that no individual or group is exempt, and lifelong learning looks like being a central feature of our society for the foreseeable future.

There are two inevitable corollaries of this increased emphasis on learning throughout life. The first is the requirement that people must have access to needed information; and the second is that they must be able to judge the quality of the information to which they are exposed. As a result, discourses about lifelong learning have become inextricably interwoven with, on the one hand, concerns about equitable access to information (much of which is in digital form) and, on the other hand, policies and

practices designed to enhance the capacity to deal with large – often overwhelming – amounts of information.

These imperatives represent more than an incremental shift; they constitute a significant refocusing of effort, for government, for business and industry, and for education and information providers. In addition, with the rapid globalisation of information, such initiatives must be seen in a global perspective. In concluding this brief review of lifelong learning and information literacy I would echo and endorse the sentiments of the G8 Digital Opportunities Taskforce; we urgently require:

> …an enhanced and coordinated global effort to build digital opportunity for all, to extend the power and promise of the digital revolution to all parts of the globe and all segments of society; to help the poorest help themselves to create richer and fuller lives that express and affirm their own distinctiveness in an increasingly interconnected global village. (DOTForce, 2001, p.12)

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Available at:
<http://www.nclis.gov/libinter/infolitconf&meet/candy-paper.html>

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